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EXAMINER

WOOD, KEVIN S

ART UNIT

PAPER NUMBER

2874

DATE MAILED: 11/29/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/907,252

Applicant(s)

ZALEVSKY ET AL.

Examiner

Kevin S Wood

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 September 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2,3,6-15,17-44,46-54 and 56-60 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

- 5) ☒ Claim(s) 9-12,17-44,46-54 and 56-60 is/are allowed.

- 6) ☒ Claim(s) 2 and 6 is/are rejected.

- 7) ☒ Claim(s) 3,7,8 and 13-15 is/are objected to.

- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.

- 10) ☒ The drawing(s) filed on 17 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some \* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8.

4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: See Henry

## **DETAILED ACTION**

### ***Response to Amendment***

1. This action is responsive to amendment A filed 9/10/02. Claims 2, 3, 6, 9-15, 17, 20, 21, 24-26, 31, 39-42, and 46-54 are now amended. Claims 1, 4, 5, 16, 45 and 55 are now canceled and new claims 56-60 are now added. Claims 2, 3, 6-15, 17-44, 46-54 and 56-60 are now pending in the application.
2. Based on applicant's amendment the rejection of claims 1 and 45 under 35 USC 112, second paragraph, is withdrawn because claims 1 and 45 are now canceled.

### ***Response to Arguments***

3. Applicant's arguments with respect to claims 2 and 6 have been considered but are moot in view of the new ground(s) of rejection.

### ***Specification***

4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

5. The abstract of the disclosure is objected to because the abstract exceeds 150 words. Correction is required. See MPEP § 608.01(b).

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

7. Claims 2 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,360,037 to Riza.

Referring to claim 2, Riza discloses all the limitations of the claimed method.

Riza discloses a method for selectively directing an input beam (1,2) to at least one of two output channels (1',2'), the method comprising: providing incidence of the input beam onto a polarizing beam splitting surface (PBS) to thereby enable splitting of the input beam into two beam components of different polarizations along different optical paths; passing the input beam components of different polarizations through a controllable polarization rotating medium operable to selectively affect the polarization of each of the beam components (34); and directing the beam components that have passed through a polarization rotating medium (34) onto the polarizing beam splitting

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surface (PBS), thereby producing at least one output beam propagating towards at least one selected output channel, depending on a current mode of the medium; wherein the input beam passes through the controllable polarization rotating medium (34) prior to being split into the two beam components of different linear polarization states. See Fig. 4a and 4b, along with their respective portions of the specification.

Referring to claim 6, Riza discloses all the limitations of the claimed invention. Riza discloses a switching method including: providing incidence of an input beam onto a polarizing beam splitting surface (36) to thereby enable splitting of the input beam into two beam components of different polarizations propagating along different optical paths; passing at least one of the split beam components of the input beam through an optical filtering means (42,44) accommodated in the optical path of at least one split beam component, thereby enabling to filter light that has interacted with the polarizing beam splitting surface to correct for an error introduced by the polarizing beam splitting surface; passing the input beam components of different polarizations through a controllable polarization rotating medium (34) operable to selectively affect the polarization of each of the beam components; directing the beam components that have passed through the polarization rotating medium onto the polarizing beam splitting surface (34), thereby producing at least one output beam propagating towards at least one selected output channel. See Fig. 3a and 3b, along with their respective portions of the specification.

***Allowable Subject Matter***

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8. Claims 9-12, 17-44, 46-54 and 56-60 are allowed.
9. Claims 3, 7, 8 and 13-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
10. The following is a statement of reasons for the indication of allowable subject matter:

Referring to claim 3, the prior art does not disclose all the limitations of the claimed method. The prior art does not disclose a switching method as claimed, including: the output beam being directed toward an additional polarizing beam splitting surface, and passing split beam components of the output beam through additional controllable polarization rotating medium.

Referring to claims 7-8, the prior art does not disclose all the limitations of the claimed method, including the step of passing at least one of the split beam components of the input beam through an optical filtering means accommodated in the optical path of at least one split beam component, to filter light that has interacted with the polarizing beam splitting surface to correct for an error introduced by the polarizing beam splitting surface, where the filter means comprises an additional polarizing beam splitting surface, light reflected from the additional polarizing beam splitting surface propagating towards the controllable polarization rotating medium.

Referring to claims 9 and 56, the prior art does not disclose all the limitations of the claimed method, including providing incidence of the split beam components of the input beam into a controllable polarization rotating medium operable to selectively affect

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polarization of each of the beam components, with an incidence angle other than 90 degrees.

Referring to claims 10-12, the prior art does not disclose all the limitations of the claimed method, including the medium being operated to provide a desired difference in phase delay in a range  $0 - \lambda/2$  between two principal axes of the medium, thereby enabling to obtain desirable partition between the two output channels.

Referring to claim 13, the prior art does not disclose all the limitations of the claimed method, including the medium being selected to compensate for a hysteresis phenomenon occurring in the medium.

Referring to claim 14, the prior art does not disclose all the limitations of the claimed method, including an electrostatic field applied to the medium is selected so as to fit phases of the beam components passing therethrough, thereby compensating for a phase shift caused by beam reflection effects during the beam propagation.

Referring to claim 15, the prior art does not disclose all the limitations of the claimed method, including an electrostatic field applied to the medium such as to cause a difference of  $\lambda/2$  in phase delay between the split beam components of different polarizations, the method thereby enabling to reduce switching differential voltage requirements.

Referring to claims 26, 17-19, 24, 27-30, 37, 46 and 58, the prior art does not disclose all the limitations of the claimed method, including the controllable polarization rotating medium comprises two elements made of a polarization rotating material, and the beam directing means comprises two retro-reflective elements associated with the

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two polarization rotating elements, respectively, so as to reflect the beam components of different polarizations of the input beam towards the polarization rotating elements, and reflect the beams passed through the polarization rotating elements onto the polarizing beam splitting surface.

Referring to claims 31-36, 38 and 59, the prior art does not disclose all the limitations of the claimed method, including the beam directing means at least partly incorporated within the controllable polarization rotating medium.

Referring to claims 39 and 60, the prior art does not disclose all the limitations of the claimed method, including the polarizing beam splitting surface is a surface of a polarizing cubic beam splitter, which has three truncated corners forming three locally adjacent facets, such that the intermediate facet intercepts with a plane of the polarizing beam splitting surface, the polarization rotating means being in the form of a plate accommodated at the intermediate facet outside of the beam splitter and having a reflective surface.

Referring to claims 49-50, the prior art does not disclose all the limitations of the claimed method, including the two output channels of the first switch device are two input channels, respectively, of the second and third switch devices, one of the output channels of the second switch device and one of the output channels of the third switch device being blocked to prevent light output therethrough, light signals collected at unblocked output channels of the second and third switch devices being thereby characterized by reduced crosstalk.



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Referring to claims 57, 20-23, 25, 40-42, 47, 48 and 51-54, the prior art does not disclose all the limitations of the claimed method, including the medium being selected from the group consisting of lithium niobate and materials exhibiting a quadratic electro-optic effect.

### ***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin S Wood whose telephone number is (703) 605-5296. The examiner can normally be reached on Monday-Thursday (7am - 5:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney B Bovernick can be reached on (703) 308-4819. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 307-0956.



KSW  
November 26, 2002

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